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U. S. DEPARTMENT OF AGRICULTURE
CULTURAL RESEARCH ADMINISTRATION
BUREAU OF ANIMAL INDUSTRY

THE BUREAU OF ANIMAL INDUSTRY AND ITS WORK

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U. S. BUREAU OF ANIMAL INDUSTRY

The Bureau of Animal Industry came into existence on May 29, 1884, with the approval of the Act of Congress entitled: "AN ACT For the establishment of a Bureau of Animal Industry, to prevent the exportation of diseased cattle, and to provide means for the suppression and extirpation of pleuropneumonia and other contagious diseases among domestic animals." As this title implies the Bureau is charged with the building up and protection of the livestock industry of the United States. These protective measures include the control and eradication of animal diseases, such as tuberculosis, cattle-tick fever, hog cholera, brucellosis (Bang's disease), glanders, anthrax, influenza, sheep and cattle scabies, and others. Close inspection is made at public stockyards of incoming shipments for the detection of infectious and contagious diseases. A further measure is the inspection of imported animals and supervision of those exported. Coupled with these activities are extensive experimentation on farms, research work in laboratories, and the application of control measures in the field. The Bureau conducts experiments in the breeding and development of improved types of cattle, horses, sheep, goats, swine, and poultry.

In accordance with the practice throughout the Department, this Bureau is organized on a basis of divisions according to work, as described elsewhere. Much of the Bureau's work is conducted in cooperation with State agricultural experiment stations, livestock sanitary officials, and other agencies having similar objectives. For facility and economy of operation, administrative functions common to the entire Bureau are grouped in a Division of Business Administration. The various units aid the Chief in the determination of general policies and the supervision of all activities. Specific duties include the preparation of estimates of expenditures for the Bureau of the Budget and for Congress; the choosing, appointing and assigning of employees; the handling of matters of discipline, leave, promotions, etc.; the issuing of expenditure authorizations,

including travel, the audit of salary, reimbursement, purchase and indemnity claims; the purchase of supplies and equipment; the keeping of records of property, of expenditures for administrative purposes and for congressional reports; of appropriation encumbrances for liabilities; the drawing of regulations in accord with the laws; and the receipt, classification and distribution of mail, with subsequent dispatch of letters and the filing of correspondence.

Since most of the work of the Bureau pertains to veterinary problems, it follows that a large number of its employees are veterinarians. Except in the Animal Husbandry and Information Divisions, the professional personnel consists largely of graduate veterinarians skilled in the diagnosis of animal diseases, in the application of preventive measures in the field, and in work involving laboratory investigations.

The educational requirements for appointment to veterinary positions in the Bureau are: Graduation from high school, 1 or 2 years of preprofessional college work, and 4 years of professional study in a recognized veterinary college.

In addition to its trained veterinarians, the Bureau's personnel includes experienced research workers and specialists qualified to perform the work outlined in the preceding discussions of the various divisions of the Bureau. Not only must these scientists have a thorough knowledge of their professions, but they must, in certain assignments, be qualified to meet and cooperate with State and city officials, college professors, the medical profession, commercial organizations, and the general public.

In recent years the Bureau has had on its rolls approximately 1,600 employees, nearly 90 percent of whom are engaged in field activities outside of Washington, D. C.

Animal Husbandry Division

The work of the Animal Husbandry Division consists chiefly in research on fundamental and practical problems

relating to more efficient breeding, feeding, and management of livestock and poultry and research on the factors involved in the production of high-quality products and their processing and preservation.

Breeding investigations include studies of the application of fundamental principles of genetics in the development of superior strains and crossbred types of farm livestock and poultry and the study of new methods for determining superiority in livestock, including record of performance and progeny tests. Principles of animal breeding are being tested and formulated through the inbreeding and cross breeding of families of guinea pigs and mice of known ancestry and with the inbreeding and cross breeding of the various classes of farm livestock and poultry with the object of improving our domestic breeds of animals.

Nutrition investigations are concerned with problems of the fundamental nutritional requirements of animals for reproduction, lactation, growth, or fattening and including the production of such desired products as meat, milk, eggs, wool, and fur, and of measuring the nutritive properties of feedstuffs in order to develop the best methods of using feeds to obtain maximum results.

The work is conducted at the various field stations of the Division and cooperatively with State agricultural experiment stations with beef and dual-purpose cattle, horses, sheep, goats, swine, and poultry. Cooperation is also maintained, through three extension representatives, with the Extension Service and State extension workers in the establishment and furtherance of projects in animal and poultry husbandry.

Beef and dual-purpose cattle breeding investigations include studies to develop superior strains and crossbred types of beef cattle that will be highly adaptable to specific regions, studies to locate through progeny tests or record-of-performance tests superior sires capable of transmitting to their offspring those characters which are highly related to efficiency and rapidity of gains and high quality of beef, studies of the effect of environmental factors upon growth and fattening qualities and related economic factors, and research with dual-purpose cattle to develop strains

capable of averaging high milk production and efficiency in the production of beef.

Nutrition investigations with beef and dual-purpose cattle include the study of nutritional problems associated with mineral and vitamin deficiencies in the diet, studies to determine values of locally produced feeds for wintering and fattening cattle in specific areas, and the study of nutritional problems in cattle production associated with the utilization and management of cut-over and forest areas of the southeastern Coastal Plains.

Management studies are being conducted to establish proper cattle carrying capacities for native range land in various sections of the country, to develop methods of care and management that will result in sound beef cattle production practices, to study different intensities of grazing and methods of range management, and to determine the relative values of various pasture grasses and grass mixtures for beef production.

Swine breeding investigations include research to develop superior strains of hogs with greater capacity for rapid growth and economy of gain, high fertility, and quality of carcass. Other studies concern the physiology of reproduction of swine, improved brood-sow management, and feeder-pig production.

Swine-feeding investigations include the determination of the nutritive requirements of swine for growth, reproduction, lactation, and fattening; studies on the proper balancing of swine rations with respect to energy, proteins, minerals, and vitamins to obtain maximum results with minimum expenditure of feed; and study of the utilization of various feeds and types of feeds, as well as the effect of various methods of management on feed utilization.

Included in the swine-management studies are those aimed at isolating the factors influencing the economic production of swine from the management standpoint; the development of improved methods of feeding, management, and sanitation of young pigs to produce healthy, profitable animals at a minimum cost; and determining the value of various pasture plants and combinations of them for swine.

Sheep-breeding investigations include research to determine the inherent capacity of sheep for efficient production of high-quality lamb meat, wool, and fur under the environmental conditions of the various regions of the country; to identify individuals, families, strains, breeds, and types of sheep most efficient in lamb, wool, or fur production under their respective environments; to determine genetic principles leading to improvement of the efficiency of sheep in the production of lambs, wool, and fur and to introduce the application of these genetic principles into the sheep industry of the country. The goat studies include breeding experiments with milk goats to determine methods of improving production and of spreading the normal breeding season of milk goats over a greater portion of the year, thus making the period of milk production more nearly cover the entire year.

Sheep-feeding studies are directed at the determination of the nutritive requirements of sheep, including the correction of nutritional deficiencies in the forage, the value of important feeds and forages, the determination of the influence of various feeds on the growth of sheep and wool, and the production and quality of mutton, lamb, wool, and fur.

Sheep-management studies are conducted also to determine the most efficient management practices for growing sheep on pastures or ranges, with various degrees of shelter, and the influences of management methods on the production and quality of mutton, lamb, wool, and fur produced.

Studies are also conducted to determine the physical, chemical, and biological structures and properties of wool and other animal fibers and to reveal the influences of breeding, feeding, and management of the fiber-producing animals on the growth, quality, and manufacturing properties of the fibers they produce.

Horse and mule studies include work on the production and use of light horses; improvement of Morgan horses through line-breeding and selection; development of measures of performance for horses and mules; the improvement of jackstock through line-breeding and selection; determination

of the type of mare best suited for mule production; and the study of the physiology of reproduction in horses and jackstock.

Feeding investigations with workstock deal with the nutritional relationships to various kinds of unsoundness which decrease work output and general usefulness. They include the study of the nutritive requirements of the horse and mule for optimum growth and development, maintenance, work, and reproduction; and study of the utilization of feeds available both generally and within specific regions to devise adequate rations to meet special conditions such as may be imposed by climate, soil deficiencies, economy, and availability and necessary transportation of feeds.

Poultry breeding investigations have as their basic objectives the development of strains of poultry highly efficient in converting feed into meat and eggs of superior quality; breeding methods which may be used to improve the efficiency and quality of stock; and manner of inheritance of characters that influence efficiency and quality. The work includes breeding for increased egg production, fertility and hatchability of eggs, and low chick mortality; the development of new types of chickens and turkeys better adapted to present-day conditions; the effects of breeding on viability; studies on the physiology of reproduction of poultry; and the administration of the National Poultry Improvement Plan and National Turkey Improvement Plan in cooperation with participating States to improve the production and breeding qualities of chickens and turkeys and reduce losses of chicks and poults from pullorum disease.

Likewise feeding studies with poultry are designed to assist farmers and poultrymen in producing quality poultry and poultry products more efficiently by acquiring more exact information on the nutritive requirements of poultry and the formulation of improved rations based on information gained on the nutritive properties of the feedstuffs that are or may be used as poultry feeds. Effort is being made to develop the information necessary for compounding efficient and economical diets for all kinds of poultry and to obtain and compile exact information of the effect

of individual feedstuffs and combinations of feedstuffs on the physical and chemical composition, nutritive properties, and market value of poultry meat and eggs.

In cooperation with State agricultural experiment stations and other agencies, the Division studies factors which influence the quality and palatability of meat.. It seeks to determine shrinkages and yields in slaughter, cutting, and processing; the effects of breeding and different feed combinations; and the influence of chilling, ripening, freezing, curing, smoking, and storage on the quality, palatability, and nutritive properties of the products.

Field Inspection Division

Activities of this Division include eradication of scabies of cattle and sheep and dourine of horses in cooperation with the livestock sanitary authorities of the various States; the investigation of reported outbreaks of disease among livestock to determine if they are communicable and, if so, assist local authorities in their control and eradication.

Regulations governing the inspection and testing of livestock intended for export are administered to determine their freedom from disease. Bureau employees also inspect the fittings and accommodations on vessels on which animals are to be transported. The inspection of all livestock offered for importation to determine freedom from disease is mandatory under the law. Inspectors are assigned along the international boundaries and on the seacoasts to inspect these animals, examine accompanying certificates and, when necessary, place the livestock in quarantine and maintain them under observation during specified periods. Animals in quarantine are subjected to certain diagnostic tests and those found to be affected with or to have been exposed to any communicable disease are refused entry and are returned to the country of origin or destroyed.

Another activity of this Division includes control over import animal byproducts, hay and straw, to prevent the introduction or dissemination of communicable livestock diseases, and the administration, jointly with the

Treasury Department, of section 306 (a) of the Tariff Act of 1930, prohibiting the importation of domestic ruminants or swine, or chilled, or frozen fresh meats deprived therefrom, from countries where foot-and-mouth disease or rinderpest exists.

Under the paragraph of the Tariff Act providing for the entry free of duty of purebred animals imported for breeding purposes by citizens of the United States, the Division investigates the reliability and accuracy of books of record and determines the identity of any such animals offered for importation, in connection with certifying them to U. S. Customs for free entry.

Information Division

On March 14, 1944, the Bureau's Editorial Office was given the status of division. The work of this Division consists chiefly in the dissemination of information designed to aid in the development and improvement of the livestock and poultry industries. The principal channels of distribution are popular and technical publications, press and radio services, exhibits, and motion pictures. The Division edits manuscripts for bulletins and other official publications; compiles and prepares some of the material; reviews manuscripts for publication in outside periodicals; prepares press and radio releases; reads proof; orders job printing; and supervises the Bureau's mailing lists and the distribution of its publications. This Division works closely with the other divisions of the Bureau and cooperating agencies in planning the presentation of subject matter. Typical services of this kind are the gathering and arranging of material for addresses, posters, charts, radio scripts, and motion picture scenarios.

The manuscripts edited and recommended for official publication by the Information Division are mainly Farmers' Bulletins, Leaflets, Circulars, Technical Bulletins, papers for the Journal of Agricultural Research, Yearbook articles, Service and Regulatory Announcements, Research Achievement Sheets, articles for mimeographing and others. The Division maintains files of the Bureau's publications.

including discontinued series.

The Farmers' Bulletins and Leaflets present results of scientific research and their practical application, in language understood by most farmers and housewives. These series are especially popular and have a very wide distribution. The more technical publications contain records of notable discoveries and advances in the field of agricultural science. Their distribution is largely among research workers and other technically trained persons. The Division also supplies information on a wide range of subjects in response to public requests.

Interstate Inspection Division

This Division administers the regulations of the Department governing the interstate movement of livestock, the object being to prevent the spread of communicable diseases from one State to another.

The inspection of livestock for interstate movement being an essential service in the control of disease, an inspection force is maintained at officially designated stockyards. The object is to prevent the dissemination of livestock diseases by detecting, segregating, and supervising the proper treatment or disposal of animals affected with or exposed to contagious, infectious, or communicable disease. The inspectors also supervise the cleaning and disinfection of all cars, trucks, and other conveyances used in transporting infected animals and all pens, chutes, and alleys in which such animals are handled.

When diseased animals are found upon inspection at public stockyards, their origin is immediately reported to the livestock sanitary officials of the State where the shipment originated. In this way centers of infection are located and the disease is prevented from reaching other farms and ranches.

This Division investigates for and reports to the Production and Marketing Administration alleged violations of the 28-hour Law. The object of this law is to prevent cruelty to animals in the course of interstate transportation by prohibiting railroads from transporting them in

interstate commerce for a longer period than 28 consecutive hours without unloading in a humane manner into properly equipped pens for feed, water, and rest for at least 5 consecutive hours. The time of confinement may be extended to 36 hours upon written request of the shipper.

This Division also directs the work of eradicating the cattle-fever tick (Boophilus annulatus) from the Southern States, Puerto Rico, and the Virgin Islands. It carries on the Bureau's field work in the control of hog cholera and related swine diseases. It also handles such special cases of livestock diseases as are assigned by the Chief of Bureau.

The eradication of the cattle-fever tick has been in progress since 1906. This work which is done in close cooperation with State and county authorities and cattle owners is now nearing completion. When this campaign began the cattle disease then commonly known as Texas fever, transmitted through the bite of the tick, was one of the most serious diseases of livestock. For many years the cattle industry of the South was retarded and hampered by this parasite, the disease it transmits, and the resulting poor condition and quality of the cattle raised in the tick-infested areas. The marketing of cattle from nearly one-quarter of the country was impeded owing to quarantine restrictions necessary in handling ticky cattle in separate portions of public stockyards, and the requirement that such cattle be sold for slaughter only. These embargoes were essential, as the infestation of northern cattle with the cattle-fever tick produced in them the fatal disease known as splenetic or tick fever.

No section of the United States has enjoyed greater benefits from a Bureau project than tick eradication has brought to the Southern States. The beneficial results of this work are felt throughout the South in the way of better herds of beef cattle and the fostering of a rapidly growing dairy industry.

In conducting the field work in the control of hog cholera this Division directs the field forces engaged in the investigation of outbreaks of hog cholera and allied ailments of swine and the suppression of such outbreaks.

Under the plan of work Bureau veterinarians are assigned to certain districts within a State. Their duties are to investigate outbreaks of swine diseases, hold autopsies, and make diagnoses. They give advice as to the proper method of treatment in case cholera is diagnosed. They assist farmers and practicing veterinarians in the handling of outbreaks and supervise the cleaning and disinfecting of premises. In sections, chiefly in the Southern States, where the services of veterinary practitioners are not available, Bureau inspectors occasionally perform the actual work of administering the serum preventive treatment. In localities where a practicing veterinarian is established, Bureau inspectors do not render service of this nature.

Since the inauguration of hog-cholera control work immense savings have accrued to the swine industry and the losses from cholera have been materially reduced.

Pathological Division

The Pathological Division is engaged in scientific investigations of diseases of domestic animals and birds, poisoning of livestock by plants and examination of viruses, serums, and other veterinary biological products used in diagnosing, preventing, and treating diseases. The more important diseases under investigation are equine infectious anemia; infectious equine encephalomyelitis; anaplasmosis; anthrax; Johne's disease; mastitis; brucellosis of cattle, swine, and goats; tuberculosis; vesicular diseases simulating foot-and-mouth disease; hog cholera; swine enteritis and erysipelas; rabies; cholera; typhoid; pullorum disease; and virus diseases, including Newcastle disease of poultry.

Biochemical and other studies are made of the tubercle bacillus and its products, with the view of improving tuberculin. Practically all the tuberculin used in the campaign to eradicate tuberculosis in livestock in the United States is produced in this Division. Mallein for the diagnosis of glanders in horses and mules is also produced in the Division. Investigations are made of the germicidal efficiency of various products, and studies are made of the factors influencing the effectiveness of disinfectants. Outfits for

determining the composition of baths used in official testing and for determining the phenol in biological products are prepared and distributed to field inspectors. Control is exercised over the stained antigens used under the provisions of the National Poultry Improvement Plan for the detection of pullorum disease in chickens.

Investigations of livestock poisoning by plants include tests to determine the nature of toxic effects of plants in various stages of growth on both livestock and laboratory animals. Chemical studies are made to determine the nature and composition of poisonous constituents of plants, together with a search for appropriate means for the prevention and treatment of poisoning of stock by plants.

The Division cooperates with the regulatory divisions of the Bureau, in conducting laboratory investigations.

In cooperation with the Division of Virus-Serum Control, the Pathological Division makes laboratory examinations of the various cultures, viruses, biological products, etc., produced under U. S. veterinary licenses. In cooperation with the Field Inspection Division it makes diagnostic tests of blood sera of animals offered for import into the United States for the detection of such diseases as glanders and trypanosomiasis. Similar tests are made in connection with the control and eradication of these diseases as they might occur in the United States.

Laboratory examinations of specimen material from animals slaughtered under Federal meat inspection are made in cooperation with the Federal meat inspection service.

Laboratory Service is also furnished the Tuberculosis Eradication Division and the Interstate Inspection Division, as well as other divisions, from time to time.

Animal Disease Station

The Animal Disease Station, located for many years at Bethesda, Md., was transferred to Beltsville, Md., in 1936 and became a part of the Pathological Division in 1943. Here facilities are maintained for carrying on all experimental work on the large animals. Practically every animal disease, except those due to nutritional deficiencies, has

been studied at one time or another at this station. Studies are also made of various factors relating to artificial insemination in animals.

Special laboratories have been constructed for the preparation of a standard Brucella antigen used in Federal-State Bang's disease control work, of Brucella vaccine used in the vaccination program, and for the testing of all Brucella vaccine produced commercially.

The Station makes periodic tests of tuberculin produced and sold under Government license. Tests are made of material suspected of being infected with foot-and-mouth disease or other communicable diseases of livestock, for purpose of control work. Tests are also made to determine the safety as well as the effectiveness of various products in connection with studies of prevention and treatment of diseases. Special biological products, blood serum, etc., are supplied by the Station to the various Bureau laboratories.

It maintains a guinea-pig-raising establishment which supplies these experimental animals for investigational purposes. The various green forage crops, required for animal feeding, are raised on the premises.

In addition to the needs of its own corps of research workers, the Animal Disease Station furnishes facilities to other divisions of the Bureau in Washington in investigations requiring the use of large experimental animals.

Tuberculosis Eradication Division

The Tuberculosis Eradication Division was organized in the Bureau in May 1917. The work of the Division, as is the case of others, is conducted in close cooperation with the livestock sanitary authorities in each State. A primary object has been to attain freedom from tuberculosis in the livestock of the country as well as in the poultry flocks, and, also, Johne's disease (paratuberculosis) in cattle. The testing of herds of cattle for tuberculosis and Johne's disease is done by Bureau, State, County, municipal, and accredited practicing veterinarians.

Cattle that react to the tuberculin tests are appraised and condemned, and are slaughtered under Federal or State

inspection. The payment of indemnity is assumed partly by the State and county and partly by the Bureau, except where no indemnity is paid from State or county funds, in which case no indemnity is paid by the Bureau for reacting cattle.

The close relationship of tuberculosis in animals and in human beings makes the eradication of the disease of great importance to the public, not only from an economic viewpoint but also from that of public health.

On November 1, 1940, every county in every State in the country, all of Puerto Rico, and the Virgin Islands, had been placed in the modified tuberculosis-free accredited area, signifying that tuberculosis among cattle in those areas had been reduced to less than one-half of 1 percent of the total cattle population. In order to safeguard against reinfection, however, it is necessary to conduct a considerable amount of retesting of cattle in all sections of the country. Approximately 288,000,000 tuberculin tests have been applied to cattle since 1917 and about 3,900,000 reactors removed for slaughter.

In July 1934, the project for the control and eradication of brucellosis (Bang's disease) in cattle was undertaken. This work is also conducted in cooperation with the livestock sanitary authorities in the various States under practically the same conditions as the eradication of tuberculosis. Brucellosis is found in cattle in practically all sections of the United States, and is the cause of serious loss to the cattle industry. It is much more prevalent in some localities than in others, a high degree of infection being found in the larger milk-shed areas. The majority of breeding troubles in cattle are caused by brucellosis. Noticeable results of the infection are premature birth of calves and sterility. The same organism that causes brucellosis in cattle can cause undulant fever in man. Some cases have been reported which resulted from the ingestion of Brucella organisms in raw milk. Contact with animals infected with brucellosis is also a means of transmitting undulant fever to man. Since July 1, 1934, approximately 74,400,000 tests have been applied to cattle in the cooperative work, and about 3,200,000 reactors have been found.

After years of research, a Brucella vaccine known as strain 19 was discovered by scientists of the Bureau. A 5-year experiment in its use in calves, beginning January 1936, was carried on by the Bureau under field conditions; and it was found that under proper conditions the use of this vaccine was very helpful in the control and eradication of brucellosis. Calfhood vaccination was taken up in the official cooperative work on January 1, 1941. It is practiced mostly in areas having considerable infection and is very successful. The number of calves vaccinated has been continually increasing; about 60,000 are now reported each month from all the States. The vaccination of adult cattle in a limited number of cases, where the herd is seriously infected, has been approved by the Bureau but each case must have the approval of the State and Bureau officials. So far, only 29 States have reported any adult cattle vaccinated in the official cooperative work.

Division of Virus-Serum Control

This Division is charged with the supervision of the preparation of biological products intended for the treatment of domestic animals in commercial establishments licensed by the Secretary of Agriculture. It receives and reviews applications for licenses which are accompanied by full descriptions of methods of production, testing, labeling, advertising and the like, for these products. It recommends the issuance of licenses to applicants after determining within reasonable certainty that the products to be produced will not be worthless, contaminated, dangerous, or harmful within the meaning of the Virus-Serum-Toxin Act. After licenses have been issued the inspection consists of two types, depending upon the kind of products produced. In establishments producing anti-hog-cholera serum and hog-cholera virus inspectors are assigned to each and they supervise the preparation and testing of the products, and inspect all animals used in the process of manufacture and testing. Licensed establishments producing such biologics as the various antitoxins, anti-serums, normal serums, aggressins, diagnostic agents, vaccines, viruses,

toxoids, and bacterins, numbering over 100 different kinds, are given thorough inspection at irregular intervals for the purpose of determining that the methods of preparation, testing, and handling of the products, as well as the sanitary conditions of the laboratories, are satisfactory. On such occasions samples of products are taken whenever conditions justify such action. These samples frequently are examined in the Bureau's laboratories.

Labels, circulars, advertising, and the like are examined in order to insure that the products are not labeled and advertised in a false or misleading manner. On May 1, 1946, there were 68 licensees producing biological products for the treatment of domestic animals under the supervision of this Division.

Applications for permits are considered and the permits are issued for the importation of such biological products, organisms, and vectors as may not endanger the livestock industry of the United States..

This Division administers the marketing agreement for handlers of anti-hog-cholera serum and hog-cholera virus, which became effective December 7, 1936, by an order of the Secretary of Agriculture. The object of the marketing agreement and order is to stabilize the serum-virus industry for the purpose of insuring an adequate supply of these products to the hog producer under all circumstances.

Zoological Division

The Zoological Division conducts investigations of parasites and parasitic diseases of domestic animals, including poultry. The parasites are studied from the standpoint of classification, morphology, life history, immunology, ecology, distribution, and injury to their hosts. The information thus accumulated serves as a basis for formulating control measures. Investigations are conducted on the therapeutic effects of drugs with reference to their use for the destruction of external and internal parasites. Many important treatments for the control of parasites have been discovered in the course of these investigations. Investigations are conducted also on parasites of animals

transmissible to man, and parasites of wild animals and birds transmissible to livestock and poultry.

Many useful discoveries have been made and recorded regarding the parasites of cattle, swine, sheep, horses, dogs, and poultry. Among the more important achievements are the swine-sanitation system to control roundworms and kidney worms; the discovery of carbon tetrachloride and tetrachlorethylene as effective remedies for hookworm disease, of phenothiazine for the removal of important worm parasites of equines and ruminants, of barium antimonyl tartrate for the removal of gapeworms from poultry, the use of feed medicated with sodium fluoride for the removal of roundworms from swine, and the standardization of most anthelmintic treatments in use the world over; the formulation of satisfactory meat inspection procedures for controlling trichinosis and tapeworm infections of man; and the discovery of the common human hookworm in the United States.

The Division maintains an index-catalogue of all parasites reported from all parts of the world. This catalogue contains the most complete index to the literature of parasitology to be found anywhere. One of the largest and most valuable parasite collections is maintained in the Division for comparative study; this collection is a part of the collections of the United States National Museum.

